

## Central Line-Associated Bloodstream Infection (CLABSI)

NHSN CLABSI protocol [http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC\\_CLABSCurrent.pdf](http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABSCurrent.pdf)

Patient name \_\_\_\_\_ MR # \_\_\_\_\_ Date of admission \_\_\_\_\_  
Date of central line insertion \_\_\_\_\_ Date of central line removal \_\_\_\_\_ Date of review \_\_\_\_\_ Date of event \_\_\_\_\_

- ☐ All elements of the NHSN criteria are first present together  $\geq 3$  calendar days of admission (day of admission is day 1). Some elements of the criteria may be present during the first 2 calendar days of admission as long as they are also present on or after calendar day 3 of admission
- ☐ All elements used to meet infection criteria occur within a timeframe that does not exceed a gap of 1 calendar day between any two elements
- ☐ Patient has a central line (CL) or umbilical catheter (UC) in place for  $> 2$  calendar days when all elements of the criteria are first present together, with day of device placement being Day 1 (or, if the patient is admitted or transferred with a central line in place, day of first access is Day 1)
  - ☐ Day 1 of line   ☐ Day 2 of line   ☐ Day 3 of line

AND

- ☐ A CL or UC is in place on the day of event or day before
  - ☐ Line in place on day of event   ☐ Line in place day before event

Patient must meet at least one of the following criteria for **laboratory-confirmed bloodstream infection (LCBI)**:

### Criterion 1 (for any patient)

- ☐ Patient has a recognized pathogen cultured from one or more blood cultures (see notes 1 and 2)

AND

- ☐ Organism cultured from blood is not related to an infection at another site

### Criterion 2 (for any patient)

- ☐ Patient has at least one of the following signs or symptoms:
  - ☐ fever ( $> 38^{\circ}\text{C}$ )
  - ☐ chills
  - ☐ hypotension

AND

- ☐ Positive laboratory results are not related to an infection at another site

AND

- ☐ The same common commensal [i.e., diphtheroids (*Corynebacterium* spp. not *C. diphtheriae*), *Bacillus* spp. (not *B. anthracis*), *Propionibacterium* spp., coagulase-negative staphylococci (including *S. epidermidis*), viridans group streptococci, *Aerococcus* spp., and *Micrococcus* spp.] is cultured from two or more blood cultures drawn on separate occasions. Criterion elements must occur within a timeframe that does not exceed a gap of 1 calendar day. See complete list of common commensals at <http://www.cdc.gov/nhsn/XLS/master-organism-Com-Commensals-Lists.xlsx>



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- ☐ All elements used to meet infection criteria occur within a timeframe that does not exceed a gap of 1 calendar day between elements
- ☐ Patient has a central line (CL) or umbilical catheter (UC) in place for  $> 2$  calendar days when all elements of the criteria are first present together, with day of device placement being Day 1 (or, if the patient is admitted or transferred with a central line in place, day of first access is Day 1)
  - ☐ Day 1 of line    ☐ Day 2 of line    ☐ Day 3 of line

AND

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  - ☐ Line in place on day of event        ☐ Line in place day before event

### Criterion 3 (neonates or infants only)

- ☐ Patient  $\leq 1$  year of age has at least one of the following signs or symptoms:
  - ☐ fever ( $> 38^{\circ}$  C core)
  - ☐ hypothermia ( $< 36^{\circ}$  C core)
  - ☐ apnea
  - ☐ bradycardia

AND

- ☐ Positive laboratory results are not related to an infection at another site

AND

- ☐ Common commensal [i.e., diphtheroids (*Corynebacterium* spp. not *C. diphtheriae*), *Bacillus* spp. (not *B. anthracis*), *Propionibacterium* spp., coagulase-negative staphylococci (including *S. epidermidis*), viridans group streptococci, *Aerococcus* spp., and *Micrococcus* spp.] is cultured from two or more blood cultures drawn on separate occasions. Criterion elements must occur within a timeframe that does not exceed a gap of 1 calendar day. See complete list of common commensals at <http://www.cdc.gov/nhsn/XLS/master-organism-Com-Commensals-Lists.xlsx>



**Central Line-Associated Bloodstream Infection (CLABSI): Mucosal Barrier Injury**  
**Laboratory Confirmed Bloodstream Infection (MBI-LCBI)**  
NHSN CLABSI protocol [http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC\\_CLABSCurrent.pdf](http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABSCurrent.pdf)

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Date of central line insertion \_\_\_\_\_ Date of central line removal \_\_\_\_\_ Date of review \_\_\_\_\_ Date of event \_\_\_\_\_

- ☐ All elements of the NHSN criteria are first present together  $\geq 3$  calendar days of admission (day of admission is day 1). Some elements of the criteria may be present during the first 2 calendar days of admission as long as they are also present on or after calendar day 3 of admission
  - ☐ All elements used to meet infection criteria occur within a timeframe that does not exceed a gap of 1 calendar day between elements
  - ☐ Patient has a central line (CL) or umbilical catheter (UC) in place for  $> 2$  calendar days when all elements of the criteria are first present together, with day of device placement being Day 1 (or, if the patient is admitted or transferred with a central line in place, day of first access is Day 1)
    - ☐ Day 1 of line    ☐ Day 2 of line    ☐ Day 3 of line
- AND
- ☐ A CL or UC is in place on the day of event or day before
    - ☐ Line in place on day of event        ☐ Line in place day before event

Patient must meet at least one of the following criteria for **mucosal barrier injury laboratory-confirmed bloodstream infection (MBI-LCBI)**:

**Criterion 1 (any age)**

- ☐ Patient of any age meets criterion 1 for LCBI with at least one blood culture growing any of the following intestinal organisms with no other organisms isolated: *Bacteroides* spp., *Candida* spp., *Clostridium* spp., *Enterococcus* spp., *Fusobacterium* spp., *Peptostreptococcus* spp., *Prevotella* spp., *Veillonella* spp., or *Enterobacteriaceae*\*
- AND
- ☐ Patient meets at least one of the following:
    - ☐ Is an allogeneic hematopoietic stem cell transplant recipient within the past year with one of the following documented during same hospitalization as positive blood culture:
      - ☐ Grade III or IV gastrointestinal graft versus host disease (GI GVHD).
      - ☐  $\geq 1$  liter diarrhea in a 24-hour period (or  $\geq 20$  mL/kg in a 24-hour period for patients  $< 18$  years of age) with onset on or within 7 calendar days before the date the positive blood culture was collected.
    - ☐ Is neutropenic, defined as at least 2 separate days with values of absolute neutrophil count (ANC) or total white blood cell count (WBC)  $< 500$  cells/mm<sup>3</sup> on or within 3 calendar days before the date the positive blood culture was collected (Day 1).

\* Partial list of MBI-LCBI Criterion 1 eligible *Enterobacteriaceae* genera: *Citrobacter*, *Enterobacter*, *Escherichia*, *Klebsiella*, *Proteus*, *Providencia*, *Salmonella*, *Serratia*, *Shigella*, *Yersina*



**Central Line-Associated Bloodstream Infection (CLABSI): Mucosal Barrier Injury  
Laboratory Confirmed Bloodstream Infection (MBI-LCBI)**

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  - ☐ Patient has a central line (CL) or umbilical catheter (UC) in place for  $> 2$  calendar days when all elements of the criteria are first present together, with day of device placement being Day 1 (or, if the patient is admitted or transferred with a central line in place, day of first access is Day 1)
    - ☐ Day 1 of line    ☐ Day 2 of line    ☐ Day 3 of line
- AND
- ☐ A CL or UC is in place on the day of event or day before
    - ☐ Line in place on day of event    ☐ Line in place day before event

**Criterion 2 (any age)**

- ☐ Patient of any age meets criterion 2 for LCBI when the blood cultures are growing only viridans group streptococci with no other organisms isolated
- AND
- ☐ Patient meets at least one of the following:
    - ☐ Is an allogeneic hematopoietic stem cell transplant recipient within the past year with one of the following documented during same hospitalization as positive blood culture
      - ☐ Grade III or IV gastrointestinal graft versus host disease (GI GVHD)
      - ☐  $\geq 1$  liter diarrhea in a 24-hour period (or  $\geq 20$  mL/kg in a 24-hour period for patients  $< 18$  years of age) with onset on or within 7 calendar days before the date the first positive blood culture was collected
    - ☐ Is neutropenic, defined as at least 2 separate days with values of absolute neutrophil count (ANC) or total white blood cell count (WBC)  $< 500$  cells/mm<sup>3</sup> on or within 3 calendar days before the date the positive blood culture was collected (Day 1)

**Criterion 3 (neonates or infants only)**

- ☐ Patient  $\leq 1$  year of age meets criterion 3 for LCBI when the blood cultures are growing only viridans group streptococci with no other organisms isolated
- AND
- ☐ Patient meets at least one of the following
    - ☐ Is an allogeneic hematopoietic stem cell transplant recipient within the past year with one of the following documented during same hospitalization as positive blood culture:
      - ☐ Grade III or IV gastrointestinal graft versus host disease (GI GVHD).
      - ☐  $\geq 20$  mL/kg of diarrhea in a 24-hour period with onset on or within 7 calendar days before the date the first positive blood culture was collected
    - ☐ Is neutropenic, defined as at least 2 separate days with values of absolute neutrophil count (ANC) or total white blood cell count (WBC)  $< 500$  cells/mm<sup>3</sup> on or within 3 calendar days before the date the positive blood culture was collected (Day 1)



## CLABSI Notes

1. In LCBI criterion 1, the phrase “one or more blood cultures” means that at least one bottle from a blood draw is reported by the laboratory as having grown at least one organism (i.e., is a positive blood culture).
2. In LCBI criterion 1, the term “recognized pathogen” does not include organisms considered common commensals (see criteria 2 and 3 for a list of common commensals). A few of the recognized pathogens are *S. aureus*, *Enterococcus* spp., *E. coli*, *Pseudomonas* spp., *Klebsiella* spp., *Candida* spp., etc.
3. In LCBI criteria 2 and 3, the phrase “two or more blood cultures drawn on separate occasions” means 1) that blood from at least two blood draws were collected within two calendar days of each other (e.g., blood draws on Monday and Tuesday would be acceptable for blood cultures drawn on separate occasions, but blood draws on Monday and Wednesday would be too far apart in time to meet this criterion), and 2) that at least one bottle from each blood draw is reported by the laboratory as having grown the same common commensal (i.e., is a positive blood culture). (See note 4 for determining sameness of organisms).
  - a. For example, an adult patient has blood drawn at 8 a.m. and again at 8:15 a.m. of the same day. Blood from each blood draw is inoculated into two bottles and incubated (four bottles total). If one bottle from each blood draw set is positive for coagulase-negative staphylococci, this part of the criterion is met.
  - b. For example, a neonate has blood drawn for culture on Tuesday and again on Thursday and both grow the same common commensal. Because the time between these blood cultures exceeds the two-day period for blood draws stipulated in LCBI and MBI-LCBI criteria 2 and 3, this part of the criterion is not met.
  - c. “Separate occasions” also means blood draws collected from separate sites or separate accesses of the same site, such as two draws from a single lumen catheter or draws from separate lumens of a catheter. In the latter case, the draws may be just minutes apart (i.e., just the time it takes to disinfect and draw the specimen from each lumen). For example, a patient with a triple lumen central line has blood drawn from each lumen within 15 minutes of each other. Each of them is considered a separate blood draw.
  - d. A blood culture may consist of a single bottle for a pediatric blood draw due to volume constraints. Therefore, to meet this part of the criterion, each bottle from two or more draws would have to be culture-positive for the same commensal.
4. If the pathogen or common commensal is identified to the species level from one blood culture, and a companion blood culture is identified with only a descriptive name (e.g., to the genus level), then it is assumed that the organisms are the same. The organism identified to the species level should be reported as the infecting organism along with its antibiogram if available.
5. Only genus and species identification should be utilized to determine the sameness of organisms (i.e., matching organisms). No additional comparative methods should be used (e.g., morphology or antibiograms) because laboratory testing capabilities and protocols may vary between facilities. This will reduce reporting variability, solely due to laboratory practice, between facilities reporting LCBI meeting criterion 2. Report the organism to the genus/species level only once, and if antibiogram data are available, report the results from the most resistant panel.
6. LCBI criteria 1 and 2 and MCI-LCBI criteria 1 and 2 may be used for patients of any age, including these patients  $\leq 1$  year of age.
7. Specimen Collection Considerations: Although blood cultures drawn through central lines can have a higher rate of contamination than blood cultures collected through peripheral venipuncture, all positive blood cultures, regardless of the sites from which they were collected, must be included when conducting in-plan CLABSI surveillance.
8. “No other organisms isolated” means there is not isolation in a blood culture of another recognized pathogen (e.g., *S. aureus*) or common commensal (e.g., coagulase-negative staphylococci) other than listed in MBI-LCBI criterion 1, 2 or 3 that would otherwise meet LCBI criteria. If this occurs, the infection should not be classified as MBI-LCBI.
9. Grade III/IV GI GVHD is defined as follows:
  - a. In adults:  $\geq 1$  L diarrhea/day or ileus with abdominal pain
  - b. In pediatric patients:  $\geq 20$  cc/kg/day of diarrhea

### **CLABSI Reporting instructions:**

1. Report organisms cultured from blood as BSI–LCBI when no other site of infection is evident (see Appendix 1. Secondary Bloodstream Infection (BSI) Guide).
2. Catheter tip cultures are not used to determine whether a patient has a primary BSI.
3. When there is a positive blood culture and clinical signs or symptoms of localized infection at a vascular access site, but no other infection can be found, the infection is considered a primary BSI.
4. Purulent phlebitis confirmed with a positive semi-quantitative culture of a catheter tip, but with either negative or no blood culture is considered a CVS-VASC, not a BSI or an SST-SKIN or ST infection.
5. Occasionally a patient with both peripheral and central IV lines develops a primary bloodstream infection (LCBI) that can clearly be attributed to the peripheral line (e.g., pus at the insertion site and matching pathogen from pus and blood). In this situation, enter “Central Line = No” in the NHSN application. You should, however, include the patient’s central line days in the summary denominator count.
6. If your state or facility requires that you report healthcare-associated BSIs that are not central line-associated, enter “Central Line = No” in the NHSN application when reporting these BSIs. You should, however, include all of the patient’s central line days in the summary denominator count.